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The Effect of Restatements on Market Returns Following the Global Financial Crisis

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ABSTRACT

This paper investigates whether stock markets react any differently to financial statement restatement information after the events of the 2008 Global Financial Crisis. The research in this paper is trying to demonstrate that financial markets reacted negatively to restatement information following the passing of the Dodd-Frank Act in 2010, ascertain if markets reacted less negatively to post-financial crisis restatements than post-Sarbanes Oxley restatements, and determine whether markets reacted more negatively to restatements of core earnings following the financial crisis period. Little research surrounding the market effects of the financial crisis exist, and it was necessary to further study the effects of restatement information on financial markets, due to its continued importance and relevance. While the impact of restatement information has been studied over previous time periods, primarily surrounding the implementation of Sarbanes Oxley in 2002, it was important to see if the general public placed any additional emphasis on, or displayed any greater awareness of the implications of, a financial statement restatement after the events of the Financial Crisis of 2008.

To investigate this issue, stock price information was collected for a period of time surrounding restatement filing dates for a small sample of companies within two time periods: Post-SOX and Post-Dodd Frank. Analyzing differences in percent changes in stock price between the two samples would allow one to develop conclusions on whether a restatement elicited a stronger or weaker market reaction. A regression model was then used to analyze potential variables within the stock price movement that may have influenced the overall outcome. The primary goal was to determine a degree of correlation between various independent variables and percent changes in stock price surrounding restatement filings for the two samples.

The findings presented some expected results, but some less promising outcomes as well. The analysis of cumulative percentage change in stock price showed that markets reacted negatively to restatement filings after the events leading to the Financial Crisis. Additionally, markets reacted more strongly to restatement information in the Post-Dodd Frank sample, which is contrary to the initial hypothesis, but only by a small margin. Aside from the number of days covered within a restatement period, the regression model failed to provide any statistically significant variables, and the model overall did not achieve statistical significance. The variables selected accounted for roughly 39% of the movement in stock price within the 2005-2007 (Post-SOX) sample, and only about 8% for the 2011-2013 (Post-Dodd Frank) sample. This lack of correlation can be attributed to a number of potential factors; among them the small sample size, the lack of consideration for other variables, and the use of cumulative changes in a stock's price instead of cumulative abnormal returns, which factors for changes in market prices relative to changes in individual security prices.

It's difficult to conclude with certainty what the implications of the research are. While the data collected portrays a stronger market reaction to restatements in the post-financial crisis period, the regression model cannot accurately portray the reasoning behind this movement, and even contradicts conventional sequences of thought at times. In a perfect world, one would like to see financial markets displaying a greater understanding of restatement implications, and a stronger awareness of how such information can be identified. Future researchers expanding on this topic should drastically increase the sample size, take cumulative abnormal returns into account, and to account for more variables in the data.

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INTRODUCTION

The purpose of this paper is to ascertain the effects of financial statement restatements on market returns. Specifically, the paper examines the results of restatements that have occurred since the 2008 Financial Crisis and compares them with post-SOX restatements to determine if an increased public awareness or emphasis on the implication of a restatement in financial markets exists. The events of the 2008 recession caused political unrest, and created economic deterrence throughout the globe. As a result, the publics' waning trust in free markets heralded a new age of increased scrutiny and regulation in the United States. With heightened pressure on auditors to provide fair and accurate information in this period of economic instability and corporate mistrust, it was appropriate to study any effects that this increased regulation and financial market reform may have caused for the accounting field. Most notably, the Dodd-Frank Wall Street Reform and Consumer Protection Act comes to mind. Proposed in 2009 and enacted into law in 2010, the purpose of the Dodd-Frank Act was "to promote the financial stability of the United States by improving accountability and transparency in the financial system, to end "too big to fail", to protect the American taxpayer by ending bailouts, to protect consumers from abusive financial services practices, and for other purposes."[1] It's important to note that this law is primarily focused at regulating Wall Street and investment risk, not necessarily auditors and the accounting profession. A similar statement can be made regarding the Volker Rule, a subsection in the Dodd-Frank Act which limited the amount of risky investments a company could hold in its portfolio. While these regulations did not specifically target auditing, like the Sarbanes-Oxley Act of 2002 did, it's clear that the general public and the government alike are

[1] This is the official "Long title" of the Dodd-Frank Wall Street Reform and Consumer Protection Act.

placing increased emphasis on risk aversion, fraud awareness, and crisis prevention. It's in this vein that the research in this paper seeks to determine whether the public and the financial markets place greater emphasis, or convey any further understanding, on financial statement restatements following the Great Recession.

A financial statement restatement can be defined as the revision and publication of one or more of a company's previous financial statements. This generally occurs when it's determined that a statement contains a material inaccuracy after its public release. A restatement can arise for any number of reasons, but can generally be categorized under the two umbrellas of unintentional error or fraudulent/improper earnings management. Evidence from previous research suggests that restatements almost always reduce income, indicating that the cause for most restatements generally arise in connection with the latter category (Wilson, 2008). It's for this reason that the analysis of market reaction to financial statement restatements is so compelling given recent economic events. Results of this analysis should help determine whether the public has significant awareness and understanding of the implications of financial statement restatements. Financial statements act as a basis for myriad investors on past performance and future earnings potential. Financial markets rely on the accuracy and reliability of the information provided in these statements, and the Sarbanes-Oxley Act aimed to achieve such reliability. And while investor confidence did improve after the implementation of SOX, financial statement restatements continue to be highly numerous and problematic. It's important to determine if, given the events leading to the 2008 Financial Crisis, the financial markets are reacting as strongly as they should to an indication that fraudulent or incorrect information has been reported.

BACKGROUND

The Financial Crisis of 2007-2008 has been considered by many to be the worst financial crisis since the Great Depression. It resulted in economic instability throughout the globe, the government bailout of large banks, and a significant downturn in both stock and housing markets. There are many underlying causes for the Financial Crisis, but The Financial Crisis Inquiry Commission, in an official document titled the Final Report of the National Commission on the Causes of the Financial and Economic Crisis in the United States, asserted that the crisis was caused, among other factors, by "widespread failures in financial regulation and supervision," "dramatic failures of corporate governance and risk management at many systemically important financial institutions," "a combination of excessive borrowing, risky investments, and lack of transparency", the "systemic breakdown in accountability and ethics," "collapsing mortgage-lending standards and the mortgage securitization pipeline," and "the failures of credit rating agencies" to correctly price risk. Only some of these factors may be tangentially related to the accounting or auditing profession, unlike the accounting scandals leading to the creation of SOX in 2002. However, one factor does remain constant between these two events: a general breakdown of trust in financial markets, corporations, and the regulators who failed to prevent or detect such pervasive issues.

This examination will, in part, attempt to expand upon an existing body of research which analyzes the market impact of financial statement restatements before, during, and after the Sarbanes-Oxley Act implementation period. In many ways, the approach will be similar; the regression model is based heavily on previous regression models used to analyze market

reactions of restatements before and after SOX. The transfer of this model from the SOX implementation period to the Dodd-Frank implementation period should yield some interesting and varying results, which will be expanded upon in the hypotheses.

The primary source on which the regression analysis is based is *Market Reaction to Restatements After Sarbanes-Oxley* (Sierra et al, 2012). The focus of this paper was to determine if the market reacted differently to restatements during the initial implementation of SOX than it did subsequently. As per Sierra, Lovata, and Jategaonkar, "SOX was designed to boost investor confidence in corporate reporting. Restatements increased after the passage of SOX, and it has been suggested that this is evidence of the effectiveness of the Act, since this was the first time companies were systematically evaluating and being held accountable for the effectiveness of internal controls. Because this was a change for all companies, it was believed that the disclosure of material weaknesses and restatements would be common during the initial implementation of SOX" (2012). Following this logic, the paper tests the hypothesis that the market actually reacted less severely to restatements in the months immediately surrounding the implementation of SOX, as the increasing number of restatements served as a positive sign that the Act was an effective tool in improving reliability in financial reporting, and companies needed time to adapt to new rules and accounting guidelines. The paper therefore seeks to test the hypothesis that "companies received a "bye" in the two years immediately following Sarbanes-Oxley implementation. Between the positive impacts that could be attributed to companies looking at their processes more thoroughly, and the learning curve for management, auditors, and investors, we hypothesize that the market reaction to restatements during the implementation period will be less than during the post-implementation period" (Sierra et al, 2012). A sample of 3,471 restatements yielded the following simplified results:

Means of CARs					
	N	**MEAN**	**STD. DEV.**	**MIN**	**MAX**
All Observations	3,471	-0.01453	0.10632	-0.95179	1.46444
Implementation	644	-0.0092	0.12465	-0.51419	1.35821
Post-Implementation	2,827	-0.01575	0.10167	-0.95179	1.46444

The analysis shows that cumulative abnormal returns are less negative for implementation restatements than post-implementation restatements. This approach of analyzing movements in stock price before and after a particular event is crucial for what is trying to be accomplished in this paper, and therefore acts as an important foundation for current and future accounting literature.

Implications of Financial Statement Restatements of Different Items by Katsiaryna Salavei offers some insight on how market reaction can be affected by the nature of the restatement itself. A stock, as the research indicates, will experience significantly more negative CARs when the restatement results from an easy-to-estimate account, versus a difficult-to-estimate account. The implication is that restatements from easy-to-estimate accounts, such as revenue recognition and cost and expense accounts, likely resulted from either an intentional misrepresentation or poor internal controls within an organization. Comparatively, difficult-to-estimate accounts related to restructuring or M&A will experience restatement reactions with less negative returns, as per the regression analysis available in the research paper. Table 3 within Salavei's paper recognizes the distribution of cumulative abnormal returns by reason. The total sample of 788 restatements ranging from a 1997-2002 announcement yield a CAR mean of -7.88%. The table also illustrates that accounts deemed easy-to-estimate experience more negative CARs (revenue recognition -8.24% mean with revenue recognition restatements accounting for over 33% of total restatements during this time, cost or expense -7.05% mean) than difficult-to-estimate accounts (reclassification -3.76% mean, related party transactions -

2.81% mean). All of these values are statistically significant at the 0.1% level. The research offered by Salavei offers two important considerations: investors tend to be sophisticated and understand the nature of restatements, and there are various factors that influence the degree of stock market volatility with regards to financial statement restatements. It's with these two frames of reference that the research for this paper is approached.

It's surprising that a significant quantity of research relating to market reactions in the post-Great Recession period cannot be found. Some articles offer insight regarding strategic challenges in an increasingly regulated business environment; for example, Smith and Muniz-Fraticelli in their paper *Strategic Shortcomings of the Dodd-Frank Act* indicate that the general public is concerned "due to the awareness that financial problems are costs that are passed on to shareholders, either directly in the form of capital losses or indirectly in the form of overall market instability...Market instability has adversely affected the competitiveness of U.S. markets" (2013). But substantial mathematical analysis on how (if, at all) the markets have changed underlying habits and assumptions does not yet exist. There is no support that the financial markets are reacting differently in a statistically significant manner to indications of corporate fraud or lack of oversight, after such events helped cause the U.S. economy to tumble in the first place. It's unclear how to interpret the fact that a large body of data regarding this matter does not yet exist, especially since countless mathematical analyses can be found on the Sarbanes-Oxley era of regulation. Some of this difference can be attributed to the notion that SOX was a direct response to accounting issues, whereas the Dodd-Frank Act targeted primarily Wall Street and various financial banking institutions. Perhaps there is no indication that the financial crisis and resulting Dodd-Frank Act would have any direct effect on accounting-related matters, which is in part what this paper will be testing. Timing could also play a factor, as many

papers have been published in the past few years regarding SOX, which was enacted in 2002. However, mathematical papers referencing SOX have also been published between 2002 and 2005, and at this point it is surprising that more analysis on the post-financial crisis capital markets does not yet exist.

HYPOTHESIS

The following are the hypotheses that will be tested through statistical analysis.

H1: *Markets reacted negatively to financial statement restatements after The Global Financial Crisis and the passing of the Dodd-Frank Act in 2010.*

The purpose of testing this hypothesis is to determine whether the general public maintained any awareness of what financial statement restatements are, or if the markets placed further emphasis on the potential implications of restatements after the fallout of the 2008 Global Financial Crisis and the enactment of the Dodd-Frank Act in 2010, by examining changes in stock prices surrounding restatement announcements. The hypothesis is based on the assumption that post-financial crisis markets would continue to react to restatements with scrutiny, and any indication of possible fraud within an organization would be met with adverse market affects. If this hypothesis cannot be shown to be statistically significant, it may indicate that the general public does not attribute the cause of the financial crisis with any accounting issue, and most concentration remains focused on banks and Wall Street. It might also indicate that the general public is not well enough informed about restatement implications, or how restatements may be identified.

H2: *Markets reacted less significantly to post-financial crisis restatements than to post-Sarbanes Oxley restatements.*

While negative stock return effects for post-financial crisis restatements are expected, they should not be more negative than post-Sarbanes Oxley restatements. In a perfect world, the business environment would see greater market reaction to restatements and other indications of fraud or poor internal controls as time progresses and more market scandals occur. However, it's anticipated that the nature of the financial crisis heralded less attention to financial statement restatements than Sarbanes-Oxley did. Results of this analysis will indicate the public's perception of how much they considered accounting issues to play a significant role in the events leading to the financial crisis. If more negative results for post-financial crisis restatements are not found which are shown to be statistically significant, it may suggest that trust in all business-related occupations and fields have been diminished, or that the public knows more about restatement implications than they did in the years following Sarbanes-Oxley.

H3: *Market returns for restatements of core earnings will be more negative than restatements not related to revenue recognition or operating expenses in the post-financial crisis period.*

This analysis is primarily a direct transfer from the Sierra, Lovata, and Jategaonkar paper *Market Reaction to Restatements after Sarbanes-Oxley*. The paper determined that restatements of core earnings are viewed more negatively than non-core restatements, which indicated that the markets placed more emphasis on revenue-and-expense related restatements above all others. This makes sense considering the ease with which management can manipulate core earnings, and the incentive that exists for management to manipulate these earnings in order to meet EPS and various other estimates. H3 for this paper will simply determine whether this same emphasis

exists after the events of the Great Recession, or if markets are starting to treat all restatements similarly.

DESCRIPTION OF THE SAMPLE

Information relevant to financial statement restatements was acquired through Audit Analytics. Thousands of restatements were found for both time periods under analysis, which are 2005-2007 for the post-SOX and pre-Financial Crisis sample, and 2011-2013 for the post-Financial Crisis sample. However, in the interest of maintaining an understanding at an appropriate level, only the 50 restatement instances in both time periods for companies with the highest net assets were selected. Larger companies are more likely to make a stronger impact in the stock market, and their market reactions may be easier to read and slightly more predictable than companies which might receive less media exposure or attention. The list of data from AA was combined with CRSP to obtain change information related to stock price, analyzing stock price movement from 1 day before the restatement filing to 2 days after the filing. This range of time was selected for two reasons. First, the assumption is that any movement prior to one day before the restatement filing is irrelevant. On the date of the filing, a negative change in stock price between the filing date and the previous day should realistically be measured. Second, the analysis is extended to two days after the filing date in order to identify post-announcement drift trends. A stock that appreciates in overall value between -1 and +2 might indicate that the market regards restatements very lowly and is quickly forgotten and ignored by investors, even if negative market returns are experienced on day 0.

VARIABLES

The dependent variable is the percentage change in stock price between days -1 and +2 of the restatement filing date. Changes will be estimated for the restatement disclosure date, minus two and plus one trading days. As stated previously, consideration for most independent variables in the regression model have been extrapolated from Sierra, Lovata, and Jategaonkar (2012), whose regression model has already done a considerably good job of analyzing market reactions to financial statement restatements surrounding Sarbanes-Oxley.

Restatement Variables

Sierra, Lovata, and Jategaonkar (2012) illustrate the many potential sources of restatement impact on market returns. Information for all variables was acquired through Audit Analytics, which generally offers extensive data relating to financial statement restatements. Audit Analytics offered information regarding fraud. If fraudulent activity is a reason behind the restatement, FRAUD is coded as 1 (dummy variable). Audit Analytics also indicates the account affected by the fraudulent activity. Particularly important for H3, Audit Analytics includes information regarding the nature of the restatement and accounts affected for all non-FRAUD restatements as well. If the data indicates that the restatement was a revenue recognition, cost of goods sold, or other operating expense issue, this restatement will be considered a CORE restatement, and this instance would be coded as 1. Consideration is also given to the pervasiveness of restatements during a period of time. It's expected that an indication of a restatement that affects, say, 5 different accounts, would elicit a stronger market reaction than an

indication of 1 or 2 affected accounts. Audit Analytics includes number of restatement categories, and for this the variable NUMFAIL is included.

The overall impact of the restatement should also be taken into consideration. If a restatement resulted in a positive change on a company's financial statements, Audit Analytics includes a 1 for Res Improves. For the model, the information will be reversed and the positive change data will be separated from the negative change data. NEG will be coded 1 if a restatement results in a negative financial statement impact.

The length of time over which the restatement exists might also be a determinant of market impact. The market might place more of an emphasis on a restatement of earnings that covers a period of several years, over a restatement of one quarters' earnings. To account for this, the end of the restatement period will be subtracted from the beginning of the restatement period. This will yield the number of days in the restatement period, which is accounted for as RESTDAYS. Also included is a variable which indicates if the restatement was a result of an SEC investigation. Audit Analytics includes a dummy variable for the variable SEC, providing a 1 if the restatement involved such an investigation.

Control Variables

The conscious decision has been made to skew the data set toward samples with the largest net assets. The assumption here is that company size is often related to market returns, and it was important to capture a sample that would show the largest market movement and impact. The size variable ASSETS is the natural log of total assets. The dummy variable EXCHANGE is also being used to indicate if the restating company is actively traded on either the New York Stock Exchange or the NASDAQ. The fact that a company is traded on a public

exchange possesses implications regarding the openness and transferability of information to investors. Instances of restatements of companies listed on these exchanges are coded as 1, and it would be interesting to see how patterns of private and public company restatements have changed between the two time periods. However, for the purpose of analyzing changes in market returns, the EXCHANGE variable had to be removed from the regression itself, as no security information is available through CRSP for private corporations.

While these variables borrow from the model constructed by Seirra, Lovata, and Jategaonkar, it was decided to remove some variables for the analysis. For example, Sierra, et al. includes variables for backdating and leasing issues that arose primarily due to changes in reporting regulations enforced by Sarbanes-Oxley. The assumption for the 2011-2013 sample is that these reporting issues have been alleviated, and would have no statistically significant impact on market reaction.

THE MODEL

The ordinary least squares regression model tested is:

$$\% \text{ Change} = \alpha + \beta 1\text{FRAUD} + \beta 2\text{CORE} + \beta 3\text{NEG} + \beta 4\text{NUMFAIL} + \beta 5\text{RESTDAYS} + \beta 6\text{SEC} + \beta 7\text{ASSETS} + \beta 8\text{EXCHANGE} + \varepsilon$$

Where:

% Change = the sum of cumulative percent changes in stock price from -1 trading day to +2 trading days around the filing date of the restatement.

FRAUD = 1 if fraud was present; otherwise, zero.

CORE = 1 if it was a core restatement; otherwise, zero.

NEG = 1 if there was a negative earnings impact; otherwise, zero.

NUMFAIL = the number of reporting issues requiring restatements.

RESTDAYS = the number of days in the restatement period.

SEC = 1 if there was an SEC investigation; otherwise, zero.

ASSETS = the natural log of assets.

EXCHANGE = 1 if the company's stock was being traded on the NYSE or NASDAQ; otherwise, zero.

The regression model will be run twice; once for the post-SOX/pre-financial crisis period (2005-2007), and once for the post-financial crisis period (2011-2013). Similar to Sierra et al.'s approach, interaction variables will then be included for each of the two periods so that significant differences can be identified and analyzed. Restatements in the post-financial crisis period will be coded with a 1 in order to account for these differences in interaction variables. This dummy variable will be multiplied by each of the independent variables. As explained by the Sierra et al. model, the coefficients' significance level would indicate the strength of a change in market reaction between the two time periods.

EMPIRICAL RESULTS

Table 1 illustrates the arithmetic means of the independent variables used in the regression model, including EXCHANGE. This analysis allows one to quickly identify the various differences between the two samples without getting too in-depth. This therefore is not the most statistically relevant basis of analysis, but it does provide some rudimentary insight. For example, exactly one restatement relating to fraud existed in both time periods sampled. Given

the small sample size it's difficult to ascertain any implications from this, but more restatements related to fraud would have been expected to exist in both time periods. The Probability of T-Test column identifies the four independent variables with statistically significant differences between the two sampled periods: NUMFAIL, RESTDAYS, SEC, and ASSETS. Considerably more restatements from the Post-SOX sample were the result of an SEC statement, and the Post-Dodd Frank sample only possessed one restatement related to an SEC investigation. The independent variable with the largest differences is RESTDAYS, which makes sense, considering the many accounting rules that Sarbanes-Oxley modified, which would force companies to retrospectively restate earnings over a longer period of time; in the case of the Post-SOX sample, 1236 days, or 3.4 years. However, it was still surprising to see an average restatement coverage length of over 594 days for the Post-Dodd Frank sample. While reduced by more than half since 2005-2007, this extended period of time might indicate that auditors, both internal and external, are not doing enough to ensure accurate disclosure in a timely manner.

Table 1: Means of Independent Variables & T-Tests

	All Observations		**Post-SOX**		**Post-Dodd Frank**		
N	100		50		50		
Variable	**MEAN**	**STD**	**MEAN**	**STD**	**MEAN**	**STD**	**Prob of T-Test**
FRAUD	0.0200	0.1414	0.0200	0.1414	0.0200	0.1414	0.846
CORE	0.2500	0.4373	0.2400	0.4314	0.2600	0.4431	0.820
NEG	0.8500	0.3582	0.8200	0.3881	0.8800	0.3283	0.406
NUMFAIL	2.3000	2.2320	2.7000	2.6206	1.9000	1.8434	**0.081**
RESTDAYS	915.7000	587.3907	1236.9000	761.6405	594.5000	413.1409	**0.000**
SEC	0.1000	0.2648	0.1800	0.3881	0.0200	0.1414	**0.007**
ASSETS	25.9370	1.0313	26.3997	1.0423	25.4742	1.0202	**0.000**
EXCHANGE	0.6900	0.4640	0.6400	0.4849	0.7400	0.4431	0.284

The bolded values indicate a statistically significant difference between the Post-SOX and Post-Dodd Frank periods at the 10% level.

Table 2 lists the cumulative percent change in stock price surrounding restatement filings for each security identified in the samples. The results were admittedly very surprising and underwhelming. Between -1 and +2 days of the restatement filing, the total percent changes in market prices were only .38% and 2.3% for the Post-SOX and Post-Dodd Frank samples, respectively. There are several potential reasons for this virtually nonexistent market response to restatement filings. First, the restatement filing date may not be the best metric for analyzing market reaction. While it *should* elicit a strong market reaction, it's possible that investors learn about restatements from other sources and on different dates. Second, the use of cumulative abnormal returns was avoided in the analysis, which measures changes in a stock's price relative to changes in a market metric, such as the Dow Jones Industrial Average or the S&P 500. The research performed focused specifically on changes in stock price with the expectation that stocks would unilaterally react adversely to restatement information. However, it's possible that even though some stocks still experienced positive movement between -1 and +2, the movement was less positive than the movement experienced by the overall market. This would illustrate a negative market reaction even if the sampled stock price continued to rise, so long as it increased at a lesser rate than the market rate. Third, it's possible that the markets simply don't place the same level of emphasis on restatements as expected. Maybe a 2.3% average decrease in stock price *is* considered a normal and expected reaction to restatement information for investors, although an accounting student or academic would have preferred to see a larger reaction given the potential implications of restatements. A possible study for a future scholar might analyze cumulative differences between restatement filing announcements and earnings announcements which fail to meet analysts' expectations, which might confirm the notion that investors place significantly more emphasis on earnings than accounting issues. And finally, the small sample

sizes could be distorting the information. While the restating companies with highest net assets were chosen expecting a more severe market reaction, it's possible that asset size was not the best measurement on which to skew the data set. Results also could have been unevenly distributed throughout the thousands of restatements found in the total population.

The data presented in Table 2 technically supports H1. Markets did react negatively to restatements filed after the 2008 Financial Crisis and the passing of the Dodd Frank Act of 2010, although the market did not react as negatively as anticipated. An analysis of cumulative abnormal returns may have yielded more evidence showing that this overall reaction is intentional, and not merely incidental. Interestingly, the data also rejects H2. Markets actually reacted more strongly to restatement information in the Post-Dodd Frank period than the Post-Sarbanes Oxley period. It's possible that, through continued education and awareness, investors have become better identifiers of restatement information, and therefore place more emphasis on it depending on its characteristics. Another potential cause for this result might be a change in market concerns. As Table 1 already indicated, only one restatement per sample was the result of fraudulent activity. However, it's possible that investors reacted most substantially to fraud restatements following Sarbanes-Oxley, as fraud was the primary catalyst behind the creation of SOX. Now, as the issues surrounding Sarbanes Oxley have become more regulated and controllable, it's possible that investors have begun to pay more attention to all restatements rather than just fraud-related restatements. This will be analyzed further within the regression analysis. But as internal controls have increasingly become an important basis for discussion, it's possible that markets are reacting to accidental restatements with even more scrutiny than before.

Table 2: Aggregated Market Reactions to Restatement Filings Reaction Measured as the Sum of % Change in Stock Price between -1 and +2			
Post-SOX		**Post-Dodd Frank**	
TICKER	**% Change in Price**	**TICKER**	**% Change in Price**
MTU	-0.0079	JPM	0.0296
MTU	-0.0244	MS	-0.0676
JPM	-0.0048	AEG	0.0286
BAC	0.0260	MFC	-0.0167
MTF	-0.0244	AV	-0.0414
PRU	0.0137	PNC	0.0013
GE	-0.0385	SHG	-0.0094
GE	-0.0004	HIG	0.0228
MER	-0.0610	LNC	0.0004
AIG	0.0426	PFG	0.0089
AIG	0.0210	SLF	-0.0389
SBP	0.0342	HMC	0.0445
BP	0.0098	HMC	0.0048
BLK	-0.0614	NBG	-0.2207
PFG	-0.0257	JNJ	-0.0020
AAPL	0.0357	COP	-0.0037
F	0.0182	GNW	0.0388
F	0.0598	CHU	-0.0507
RD	-0.0275	CAT	0.0535
DCX	-0.0014	EBR	-0.0251
SLM	-0.0195	SAN	-0.0614
STO	-0.0574	KMI	0.0065
SI	0.0008	DOW	-0.0263
NBG	0.0542	EC	-0.0278
FITB	-0.0139	ZION	-0.0085
NVS	-0.0006	ESRX	-0.1291
DUK	-0.0285	VE	-0.1027
NFS	-0.0253	TMUS	-0.0768
ACE	-0.0045	LUK	0.0042
		CIT	0.0031
		CIT	0.0164
		CIT	-0.0016
		CIT	-0.0124
		EMC	0.0186
		CHK	-0.1461
Average % Change	**-0.0038**	**Average % Change**	**-0.0225**

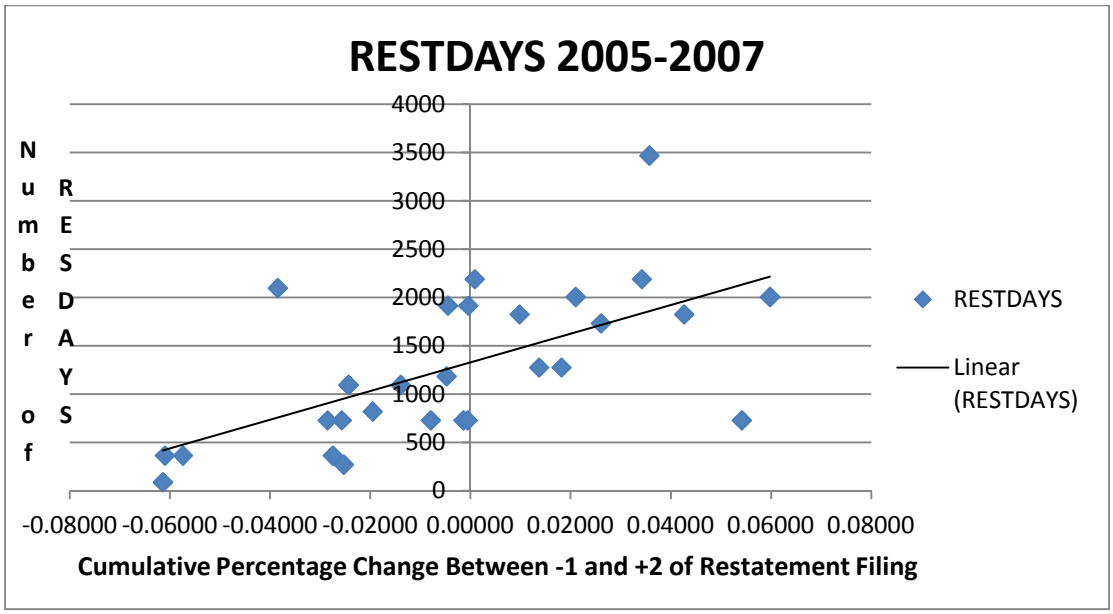
Table 3 presents the analysis of the regression model run on the two sampled time periods. From the 50 restatement instances gathered and used for Table 1, all instances of private corporations from the regression were unfortunately removed, as stock data was not available for these companies. The resulting samples for the regression model consist of 29 instances for the Post-SOX period and 35 instances for the Post-Dodd Frank period. Both regressions were run in Excel. The data poses some interesting results. The estimates for each independent variable, or coefficients, indicate the rate of change of the output given a rate of change in that variable; in other words, it's a measure of correlation within the linear regression formula. Some expected relationships within both samples were identified. For instance, negative restatement filings, SEC investigations, and larger net assets yield negative relationships with stock price movement for both time periods, and fraud indicators within the Post-Dodd Frank sample resulted in a negative market reaction. However, FRAUD in the Post-SOX sample indicates a positive relationship with market price, which is concerning, and CORE restatements only yielded a negative relationship in the Post-SOX sample. Some of these findings can once again be attributed to some of the limitations previously mentioned, among them the very small sample size. Additionally worrisome is the fact that RESTDAYS appears to be the only statistically significant independent variable at the 10% level within the regression model. Scatterplots have been provided for only RESTDAYS for this reason, which still shows a significant degree of variability and virtually no distinguishable pattern. The adjusted R-Squared for each model, which is a goodness of fit test which measures how well the regression line approximates the data points and adjusted for the number of explanatory terms, is extremely low. The first sample's regression line can approximate 38.5% of the data, while the second sample can only approximate for a mere 8.3%. This drop in the data's ability to explain movement is especially

surprising, considering the sample size is slightly larger for the second regression model. Additionally, neither model is statistically significant, although the Post-SOX model is much closer to being statistically significant than the Post-Dodd Frank model. An explanation or indication of why both models failed to achieve higher R-Squared values, or why neither demonstrates statistical significance, cannot be found.

Table 3: Regression on Individual Time Periods
Dependent Variable is Cumulative Change in Stock Price (-1,0,+1,+2)

	Post-SOX				**Post-Dodd Frank**			
Variable	**Estimate**	**Std Err**	**t-value**	**Prob of t**	**Estimate**	**Std Err**	**t-value**	**Prob of t**
Intercept	0.15051	0.14125	1.06551	0.29874	0.03047	0.29575	0.10303	0.91870
FRAUD	0.03289	0.04667	0.70474	0.48872	-0.08460	0.06330	-1.33645	0.19256
CORE	-0.03300	0.01944	-1.69787	0.10430	0.03350	0.02436	1.37519	0.18038
NEG	-0.01552	0.01470	-1.05553	0.30318	-0.01054	0.02854	-0.36937	0.71474
NUMFAIL	0.00406	0.00318	1.27611	0.21585	-0.00706	0.00503	-1.40554	0.17126
RESTDAYS	0.00003	0.00001	3.80465	**0.00104**	-0.00005	0.00003	-1.80103	**0.08288**
SEC	-0.02506	0.01687	-1.48500	0.15240	-0.04182	0.05726	-0.73044	0.47141
ASSETS	-0.00695	0.00543	-1.28114	0.21411	-0.00020	0.01147	-0.01769	0.98601
			N	29			N	35
			MODEL F-VALUE	3.501			MODEL F-VALUE	1.437
			SIGNIFICANCE	0.012			SIGNIFICANCE	0.232
			ADJUSTED R-SQUARED	0.385			ADJUSTED R-SQUARED	0.083

Bold indicates statistical significance at the 10% level or better.



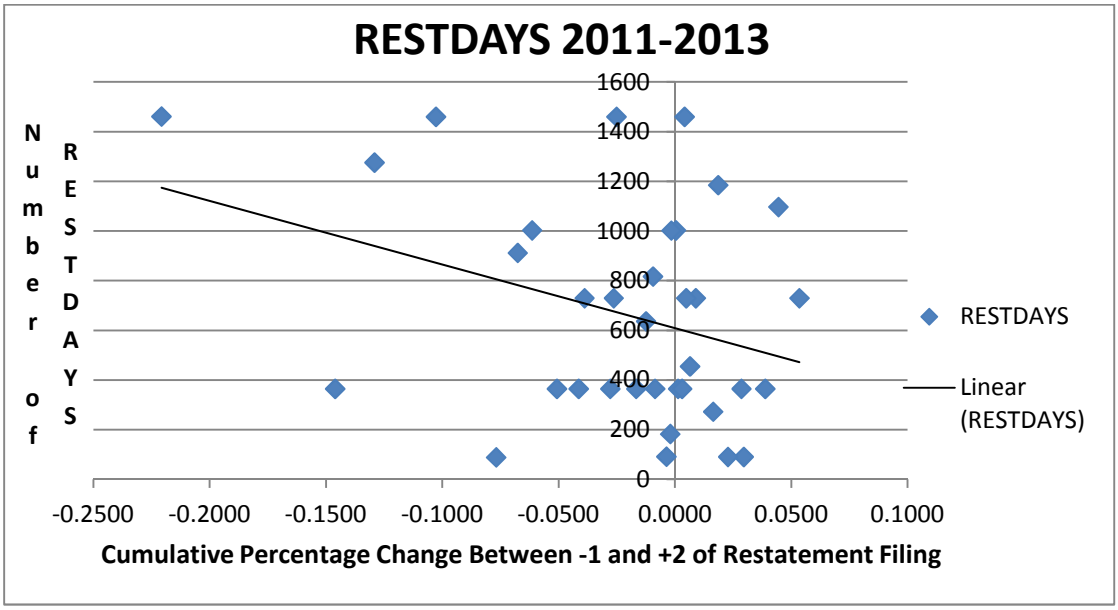


Table 4 further expands on the regression analysis by combining all independent variables from the two samples to create one regression model. The purpose of presenting the results of all interactions is to determine if any statistically significant differences exist between the two regressions presented in Table 3. Parallel to what Table 3 illustrated, NEG, SEC, and

ASSETS realize a negative market response for both samples, and the RESTDAYS variable remains statistically significant. Unlike Table 3, however, Dodd FRAUD, Dodd CORE, and Dodd NUMFAIL have developed some statistical significance at the 10% level as well. The Adjusted R-Squared remains very low for the combined model presented in Table 4. Only around 16.5% of the change in stock price between the two time periods can be explained by relationships among the independent variables. Additionally, the model overall fails to achieve statistical significance at the 10% level.

Tables 3 and 4 can be analyzed to draw inferences about H3. H3, which was used to determine if market returns for restatements of core earnings will be more negative than restatements not related to revenue recognition or operating expenses in the post-financial crisis period, has not been supported. In fact, restatements of core earnings in the Post-Dodd Frank sample had a positive effect on market returns, which simply should not be the case. Again, the issue might come down to the skewing of the data, the very small sample size, or the lack of a measurement against market returns to develop cumulative abnormal returns instead of the isolated view of changes in stock's price. What's interesting is that the Post-SOX period *does* experience an adverse market reaction to core restatements, while the Post-Dodd Frank period does not. The information from Table 2 seems to indicate that markets react more negatively to restatements overall in the Post-Dodd Frank period, suggesting greater knowledge or emphasis in the area of restatements. However, the fact that the notification of a core restatement no longer yields a negative market reaction seems to advocate otherwise. Perhaps other variables played a greater role in influencing overall market reaction during the period following the Financial Crisis.

Table 4: Regression With All Possible Interactions Dependent Variable is Cumulative Change in Stock Price (-1,0,+1,+2)				
Variable	**Estimate**	**Std Error**	**t-value**	**Prob of t**
Intercept	0.08832	0.17078	0.51716	0.60737
SOX FRAUD	0.03280	0.08128	0.40361	0.68826
SOX CORE	-0.02885	0.03172	-0.90950	0.36754
SOX NEG	-0.01476	0.02551	-0.57844	0.56561
SOX NUMFAIL	0.00371	0.00545	0.68014	0.49962
SOX RESTDAYS	0.00003	0.00001	2.15884	**0.03579**
SOX SEC	-0.02433	0.02932	-0.83004	0.41054
SOX ASSETS	-0.00459	0.00663	-0.69205	0.49217
Dodd FRAUD	-0.08729	0.05020	-1.73872	**0.08836**
Dodd CORE	0.03448	0.01934	1.78277	**0.08082**
Dodd NEG	-0.00934	0.02264	-0.41250	0.68177
Dodd NUMFAIL	-0.00747	0.00386	-1.93695	**0.05853**
Dodd RESTDAYS	-0.00005	0.00002	-2.38785	**0.02085**
Dodd SEC	-0.04366	0.04564	-0.95664	0.34345
Dodd ASSETS	-0.00243	0.00666	-0.36570	0.71616
MODEL F-VALUE			1.888	
SIGNIFICANCE			0.052	
ADJUSTED R-SQUARED			0.165	
Bold indicates statistical significance at the 10% level or higher.				

CONCLUSION

The purpose of this paper was to determine if financial markets reacted any differently to restatements announced in a period following the accounting scandals leading to the Sarbanes-Oxley in 2002 than restatements announced in the wake of the Global Financial Crisis of 2008. Through various mathematical analyses, it can be concluded that although markets did in fact react differently and overall more strongly to financial statement restatement information, some of the relationships did not react in an expected manner. The two samples yielded an overall difference of about 1.9% change in stock price decrease between -1 days and +2 days of the

restatement filing. However, the Post-SOX sample only showed an average .38% decrease in stock price over the course of the four days analyzed. The regression analysis shifted focus toward the independent variables themselves and how they influenced stock price between the two samples. Some of the relationships were expected, such as the negative relationship between NEG, SEC, and ASSETS across all samples, but it was surprising to see the one company with a fraud related restatement in the Post-SOX sample experience positive market returns surrounding the date of filing. In the Post-Dodd Frank sample, markets reacted more negatively to FRAUD, NUMFAIL, RESTDAYS and SEC, and less negatively to such important variables as CORE. Overall, the models possessed very little statistical significance, indicating a substantial degree of noise with the variables selected, or possibly that the variables selected simply do not do a very good job of explaining movement in stock price surrounding the release of restatement information.

It's difficult to interpret the meaning behind these results without further study and analysis. While the generally stronger market reaction to restatement filings in the Post-Dodd Frank period should indicate an increased awareness and emphasis on restatements with regards to stock value, the variables selected do not successfully explain why this increased awareness and emphasis exists.

While the analysis did not conclude in an anticipated manner, it has still provided a valuable contribution to the accounting literature. As stated previously, it has been difficult to find any accounting research related to post-financial crisis markets. Perhaps this is because accounting scholars did not deem such analysis necessary, as the Financial Crisis was primarily economics and finance related. The results of the analysis perhaps lend some credence to this viewpoint. However, it's important to continue analyzing various accounting issues, especially

those related to fraud and market awareness, regardless of the time period or any extraordinary events that may have preceded it. The accounting profession must remain committed to fair, accurate, and timely reporting of financial information to the public, and accountants must play a role in continuing to educate investors, maintaining a marketplace free from fraudulent activity, and improving the skills of workers so that restatements may become a less frequent occurrence.

Future scholars looking to expand upon the ideas presented in this paper should increase sample size by a considerable margin. It was damaging to the research to have only had one restatement per sample related to fraud, and relatively few SEC restatements as well. Overall, all of the variables could have benefitted from a larger sample size. Choosing another metric for sample selection other than sample size would also be suggested. While only around 10 restatements in the entire population of thousands of restatements (for the Post-Dodd Frank sample in particular) were related to fraud, it would be interesting to see how these 10 instances of fraudulent restatements interacted with the underlying stock price information. The use of cumulative abnormal return information might also be recommended, instead of cumulative percentage change in stock price over a time period, which is what the analysis used. Sierra, Lovata, and Jategaonkar used CARs in their analysis of restatement reactions, and their models seem to have more statistical significance than the model presented in this paper, perhaps in part due to this reason. It would also benefit the research to expand the number of independent variables to pick up some correlations that may have been completely missed altogether.

The research has demonstrated the complexity of mathematical data analysis. Even with significant variables that realistically would have a substantial impact on stock price movement, the model was unable to account for even half of the total market reactions included in the sample. The research also encourages one to think critically about the implications of data. While

it's difficult to explain with mathematical accuracy why some fraudulent restatements yielded positive market reactions surrounding the announcement date, it was important to think about some underlying external factors that could have caused variations from the expected output. It was also critical to learn the importance of not taking the lack of significant findings as a bad sign. It could simply be an indication that the hypotheses presented are not fully supported given the data set and variables provided.

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